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November 16, 2001

00-218

By Hand Delivery

Ms. Magalie R. Salas
Secretary
Federal Communications Commission
445 Twelfth Street
Washington, D.C. 20554

Dear Ms. Salas:

Enclosed for filing with the Commission are an original and 12 copies of Verizon Virginia Inc.'s Motion for Leave to File Supplemental Rebuttal Testimony as well as the Supplemental Rebuttal Testimony of Dr. Timothy J. Tardiff and Francis J. Murphy. Courtesy copies are also being provided to the persons on the attached service list.

Please date-stamp the additional copy included herewith. Thank you for your attention to this matter. Any questions regarding this filing should be directed to the undersigned at (202) 661-3850.

Very truly yours,

Christopher S. Huther
Counsel for Verizon Virginia Inc.

Enclosures

cc: Attached Service List

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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of Petition of WorldCom, Inc. Pursuant to Section 252(e)(5) of the Communications Act for Expedited Preemption of the Jurisdiction of the Virginia State Corporation Commission Regarding Interconnection Disputes with Verizon Virginia Inc., and for Expedited Arbitration	)	CC Docket No. 00-218
In the Matter of Petition of Cox Virginia Telecom, Inc. Pursuant to Section 252(e)(5) of the Communications Act for Preemption of the Jurisdiction of the Virginia State Corporation Commission Regarding Interconnection Disputes with Verizon Virginia Inc. and for Arbitration	)	CC Docket No. 00-249
In the Matter of Petition of AT&T Communications of Virginia Inc., Pursuant to Section 252(e)(5) of the Communications Act for Preemption of the Jurisdiction of the Virginia Corporation Commission Regarding Interconnection Disputes With Verizon Virginia Inc.	)	CC Docket No. 00-251

MOTION FOR LEAVE TO FILE SUPPLEMENTAL REBUTTAL TESTIMONY

Verizon Virginia Inc. ("Verizon VA") hereby moves for leave to file the enclosed Supplemental Rebuttal Testimony of Dr. Timothy J. Tardiff and Mr. Francis J. Murphy. On September 21, 2001, the parties in this proceeding respectively filed surrebuttal testimony as directed by the *Procedures Established for Arbitration of Interconnection Agreements Between Verizon Virginia and AT&T, Cox and WorldCom*, CC Docket Nos. 00-218, 00-249, 00-251, DA

01-270, Public Notice (rel. February 1, 2001). In their filing, AT&T Communications of Virginia, Inc. ("AT&T") and WorldCom Inc. ("WorldCom") (collectively, "AT&T/WorldCom"), proffered a newly revised, allegedly corrected, version of their cost model containing four significant changes to the version they previously advocated ("Revised Model"):

1. a reduction in line counts from 6.7 million to 5.7 million;

2. a complete replacement of the Switching and Interoffice Module, which is based on AT&T/WorldCom's acknowledgment of substantial errors in the interoffice calculations contained in a previous version of their Model;

3. an attempt to correct errors in the assignment of network operations expenses to UNEs; and

4. a reversal in the assignment of traffic sensitive and non-traffic sensitive switching costs.

As the Revised Model was submitted as part of AT&T/WorldCom's surrebuttal testimony, Verizon VA did not have an opportunity to comment on these important changes. Such an opportunity must now be afforded as the Commission's rules, the Administrative Procedure Act ("APA") and the Due Process Clause of the Fifth Amendment provide that parties in Commission proceedings have a right to be heard on all relevant issues. The Commission has acknowledged that this right encompasses the opportunity to respond to claims made by the other parties.[1] As stated by the Supreme Court, "[t]he right to a hearing embraces not only the right to present evidence, but also a reasonable opportunity to know the claims of the opposing party and to meet them. The right to submit argument implies that opportunity; otherwise the right may be

[1] *See, e.g.*, Garrett, Andrews and Letizia, Inc., *Memorandum Opinion and Order*, 88 FCC 2d 620, 623 ("*Garrett*") (Rev. Bd. 1981) ("If the information submitted is utilized by the agency in its disposition of the case, due process requires that the opposing parties be afforded an opportunity to meet and rebut such evidence"), *citing Ralpho v. Bell*, 569 F. 2d 607, 628 (D.C. Cir. 1977); *North American Broadcasting Co., Inc.*, 21 FCC 2d 631, 633 (Rev. Bd. 1970); *Chapman Radio and Television Company*, 6 FCC 2d 768 (Rev. Bd. 1967).

but a barren one."[2] Moreover, implicit in this right is the opportunity to respond to changes in a party's position or underlying theory of a case.[3]

Accordingly, Verizon VA hereby requests leave to file the attached Supplemental Rebuttal Testimony responding to the changes reflected in AT&T/WorldCom's Revised Model. Because the right to be heard is a "cornerstone of due process," parties to this arbitration proceeding must be afforded every opportunity to make their case on all relevant issues.[4] Since AT&T/WorldCom are now urging the Commission to adopt this new Revised Model, it is clearly a relevant, if not vital, issue in this proceeding. Therefore, Verizon VA must be allowed to respond at this time. Finally, no prejudice to any party should arise as a result of the filing of the attached Supplemental Rebuttal Testimony.

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[2] *Morgan v. United States*, 304 U.S. 1, 18 (1938).

[3] *See, e.g., Williston Basin Inter. Pipeline Co. v. F.E.R.C.*, 165 F.3d 54, 63-64 (D.C. Cir. 1999) (overturning order because party was not afforded opportunity to address new data being relied upon by agency in decision making process).

[4] *MCI Telecommunications Corporation v. BellSouth Telecommunications, Inc.*, 9 F. Supp. 2d 766, 773 (E.D. Ky. 1998).

CONCLUSION

For the foregoing reasons, Verizon VA's Motion For Leave to File Supplemental Rebuttal Testimony should be granted and the enclosed Supplemental Rebuttal Testimony should be allowed into the record of this proceeding.

Respectfully submitted,

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Dated: November 16, 2001

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I do hereby certify that true and accurate copies of the foregoing Motion For Leave to File Supplemental Testimony and the Supplemental Testimony were delivered this 16th day of November, 2001, by electronic mail and overnight delivery to:

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In the Matter of Petition of WorldCom, Inc. Pursuant to Section 252(e)(5) of the Communications Act for Expedited Preemption of the Jurisdiction of the Virginia State Corporation Commission Regarding Interconnection Disputes with Verizon Virginia Inc., and for Expedited Arbitration	)	CC Docket No. 00-218
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SUPPLEMENTAL REBUTTAL TESTIMONY OF TIMOTHY J. TARDIFF ON BEHALF OF VERIZON VIRGINIA INC.

November 16, 2001

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I. INTRODUCTION

Q. Please state your name, occupation, and business address.

A. My name is Timothy J. Tardiff. I am a Vice President at National Economic Research Associates ("NERA"). My business address is 1 Main Street, Cambridge, MA 02142.

Q. Are you the same Timothy Tardiff who filed rebuttal testimony in this proceeding on August 27, 2001?

A. Yes.

Q. What is the purpose of your supplemental rebuttal testimony?

A. The purpose of this testimony is to respond to the cost model changes and associated restatement of UNE costs included in the surrebuttal testimony of Brian F. Pitkin on behalf of AT&T Communications of Virginia, Inc. ("AT&T") and WorldCom Inc. ("WorldCom") (collectively, "AT&T/WorldCom"), dated September 21, 2001. Mr. Pitkin's surrebuttal testimony presents new costs estimates based on four corrections and/or changes to his original study: (1) a reduction in line counts from 6.7 million to 5.7 million, (2) a complete replacement of the Switching and Interoffice Module, which is based on his acknowledgment of substantial errors in the interoffice calculations contained in the previous version of the Modified Synthesis Model ("MSM" or "Model") filed in this proceeding, (3) an attempt to correct errors in the assignment of network operations expenses to UNEs, and (4) a reversal in the assignment of traffic sensitive and non-traffic sensitive switching costs. My testimony addresses the first three changes. Mr. Francis J. Murphy's testimony comments on all four changes.

Q. Do Mr. Pitkin's modifications change your previous conclusion that the MSM is not capable of providing accurate, company-specific UNE cost estimates in Virginia?

A. Absolutely not. Although Mr. Pitkin's changes generally cause the MSM to produce somewhat higher UNE costs, they are still unrealistically low. Further, a comparison of his original and revised results further illustrates the many flaws previously identified in the Model's input assumptions, as well as its algorithms. Finally, although Mr. Pitkin discarded the original Switching and Interoffice Module, thus acknowledging that his previous interoffice cost estimates were fatally flawed, it is clear that the new module is essentially untested and, as explained in more detail in Mr. Murphy's testimony, is incapable of producing accurate UNE cost estimates.

Q. What is the overall effect of Mr. Pitkin's changes?

A. The line count changes and introduction of an entirely new Switching and Interoffice Module produce a purportedly "efficient" network that differs greatly from the network modeled in Mr. Pitkin's previous filing. Table 1 presents these comparisons.

Table 1

	Original July 2 Filing	Revised September 21 Filing
Lines	6.7 million	5.7 million
Distribution Clusters[1]	5,775	4,803
Average Loop Length	13,668	14,351
Interoffice Rings	19	15
Ring Volume (DS-3)	5,531	4,161
Number of ADMs	589	285

Q. Why are these differences significant?

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[1] Inspection of particular wire centers reveals that not only does the number of clusters decline substantially overall (suggesting a very different "efficient network"), but individual wire centers show even larger changes. For example, Verizon Exhibit No. 150 shows that his original run produced 256 clusters for the BEVLVABV wire center, a number of which have only a single line. His modified results (see Verizon Exhibit No. 151) produce only 11 clusters for that same wire center. Of course, the reduction in the number of clusters exacerbates the problem

A. These differences starkly illustrate the unrealistic results produced by AT&T/WorldCom's "instantaneous replacement" theory, applied in conjunction with Mr. Pitkin's unreliable and changing line count projections. Table 1 shows that the "efficient firm" that AT&T/WorldCom posit would be constantly changing, e.g., the route structure for loops and the interoffice ring configuration for an "efficient firm" based on 5.7 million lines may no longer be "efficient" when there are 6.7 million lines.

II. LINE COUNTS

Q. How did Mr. Pitkin revise the line counts used in the MSM?

A. In my previous testimony, I noted that Mr. Pitkin's assumption that special access voice-grade equivalent lines would continue to grow at extraordinary rates produced line count estimates that were about 30 percent greater than the line count at the end of 2000, and 63 percent greater than the line count used in the Commission's original Synthesis Model. With his latest filing, Mr. Pitkin has reduced his special access line forecast by 700,000 lines. .[2]

Q. Is Mr. Pitkin's use of a reduced line count an improvement?

A. The reduced line count is closer to the proper figure for determining loop costs: the number of lines that use copper distribution facilities. However, the line count still suffers from the fatally flawed that assumption that high-capacity facilities are ordinary subscriber loops provisioned on copper distribution facilities. This improper treatment of high-capacity facilities assumes scale economies that simply do not exist, e.g., there are

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identified in Mr. Murphy's rebuttal testimony (at p. 20) that the MSM represents distribution areas that are too large in area but too few in number.

not 2 million additional lines to share the poles and other support structures for the copper distribution plant. Comparing his original and revised loop cost proposals illustrates the nature of these false economies.

Table 2

	September 21 Filing	July 2 Filing
Lines	5,675,519	6,673,747
Avg. monthly loop cost	$6.48	$5.92
Incremental loop cost[3]		$2.74

Because the customer locations of the Model do not change, an increase in lines (e.g., the one million line difference between Mr. Pitkin's two filings) results in an unrealistic increase in the amount of shared resources. In particular, a significant portion of the costs needed to provide the 5.7 million lines (at the MSM's cost of $6.48) are not increased when the MSM hypothetically adds one million more lines, producing the artificial result that these "additional" lines increase total cost by only $2.74 per line. In real networks, such a large increase in lines would typically be accompanied by an increase in the number of customer locations as well, implying that the degree of sharing implied by the MSM would not be available. This feature of the MSM artificially depresses unit costs, as Table 2 above illustrates.

Q. Does the reduction in line counts have other impacts on Mr. Pitkin's cost estimates?

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[2] However, because of the Model flaws identified during cross examination, the MSM's line count has actually been reduced by about one million lines. Before the Federal Communications Commission, CC Docket Nos. 00-218, -249, -251, *Transcript* (Oct. 29, 2001) at pgs. 4308-4309.

[3] Incremental loop cost = (original lines x original loop cost - revised lines x revised loop cost)/(original lines – revised lines).

A. Yes. As Table 1 demonstrates, the reduction in special access lines also reduces the amount of interoffice traffic (DS-3s) on the SONET rings. This reduction in demand partially explains the substantial reduction in interoffice electronic equipment (Add Drop Multiplexers ("ADMs")). In addition, because Mr. Pitkin derives his high-capacity (DS-1 and DS-3) UNE loop costs from the output of the MSM, the reduction in special access voice grade equivalents should have produced a corresponding reduction in the estimated number of special access lines per loop. In fact, Mr. Pitkin's surrebuttal testimony did not update either this ratio or the high capacity loop costs that would follow from it.

Q. Are you recommending that Mr. Pitkin update his estimate of the number of special access lines per loop?

A. No. In fact, such an update would further illustrate the absurdity of the manner in which Mr. Pitkin derives DS-1 and DS-3 costs as a multiple of the loop costs produced by the MSM, which Mr. Murphy explained in his rebuttal testimony. In his direct testimony, Mr. Pitkin argued that the weighted average of the number of DS-1 lines per physical loop and the number of DS-3s per physical loop was about 8.[4] However, such a weighted average is a mathematical impossibility. By definition, the ratio of voice-grade equivalents from a DS-1 service can be no less than 12.[5] The ratio for DS-3s is a multiple of the DS-1 ratio. There is no logical way for the weighted average of two numbers that

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[4] Before the Federal Communications Commission, CC Docket Nos. 00-218-, 249, -251, *Direct Testimony of Brian F. Pitkin* (July 31, 2001) at p. 25. This multiple appears to be based on the ratio of Mr. Pitkin's former projection of special access lines to his projection of private line loops from ARMIS 43-04 (separations) data.

[5] The Tenth Report and Order explains how a DS-1 service provided on copper can provide 24 voice-grade channels on two physical pairs, producing a multiple of 12. To the extent that some DS-1s are not provided on copper, the ratio would be even higher. In the Matter of Federal-State Joint Board on Universal Service; In the Matter of Forward-Looking Mechanism for High Cost Support for Non-Rural LECs, CC Docket Nos. 96-45 and 97-160, *Tenth Report and Order,* FCC 99-304 (rel. Nov. 2, 1999) at ¶ 100.

are substantially larger than 8 to equal 8. The fact that Mr. Pitkin's approach would produce a value lower than 8 demonstrates that his latest results are even more absurd than his previous ones.

Q. In sum, did Mr. Pitkin's "corrections" to the line count produce results reflecting accurate UNE costs?

A. No. The representation of high capacity facilities as ordinary loops in the MSM still causes an artificial reduction in estimated loop costs. In effect, this application of the Model shifts the costs caused by ordinary loops to the nonexistent "high cap loops," thus violating any reasonable notion of cost-causation. Mr. Pitkin evidently would apply the incorrect multiples he derived in his direct testimony to his biased estimate of ordinary loop costs, which would produce improper cost estimates for DS-1 and DS-3 loops as well.

III. INTEROFFICE INVESTMENT

Q. Please explain the significance of Mr. Pitkin's introduction of a new Switching and Interoffice Module on September 21.

A. With virtually no explanation, Mr. Pitkin seems to have agreed with the conclusion in the rebuttal testimonies of Mr. Murphy and me that the Switching and Interoffice Module in his July 2 filing had significant errors. Rather than addressing the specific errors that we identified and explaining how he had fixed them, he instead has offered an entirely new module whose origin is unclear. As I explain in more detail below, the new Switching and Interoffice Module has had a tortured history in the past 2 years, with AT&T/WorldCom introducing, withdrawing, substituting, and "correcting" a series of modules in New York, Massachusetts, New Jersey, and now, this proceeding. They have "picked and chosen" the corrections they have made, but the bottom line for this

proceeding is that Mr. Pitkin's September 21 module is still seriously flawed and understates costs.

Q. Why did Mr. Pitkin abandon his July 2 Switching and Interoffice Module?

A. Without addressing the specific criticisms Mr. Murphy and I levied against the Model, Mr. Pitkin has acknowledged that Verizon's criticisms in the New York proceeding caused the HAI Model sponsors to change the module. Mr. Pitkin's new September 21 module allegedly incorporates all the changes made in the New York proceeding.

Q. Have you previously commented on the impact of these changes on the interoffice investments produced by the July 2 version of the module?

A. Yes. In my rebuttal testimony, I estimated that the types of corrections identified in other proceedings would increase the investment in electronic equipment from $238 million to $1,074 million, a more than four-fold increase. This calculation was based on my interpretation of the significant changes made in the New York proceeding.[6] In fact, substituting the module that AT&T/WorldCom ultimately provided in the New York proceeding[7] for the module used to produce Mr. Pitkin's original results, the investment in electronics is actually $1,125 million. My preliminary calculations were thus slightly conservative.

Q. What happens when you substitute Mr. Pitkin's September 21 module for his July 2 module and then rerun his original calculations?

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[6] Before the Federal Communications Commission, CC Docket Nos. 00-218, -249, -251, *Verizon's Response to AT&T/WorldCom's Tenth Set of Data Requests, Response No. ATT-10-95* (Sept. 9, 2001).

[7] Before the New York Public Service Commission, Case 98-C-1357, *AT&T/WorldCom Exhibit 454* (Jan. 17, 2001).

A. Substituting the September 21 module the July 2 module produces electronics investment that is considerably smaller than those resulting from the module provided in the New York proceeding when the New York module is run for Virginia. The September 21 module produces an electronics investment of $531 million, while the real New York module (run for Virginia) produces over twice that amount -- $1,125 million. So, although Mr. Pitkin claims, "I have incorporated all the changes that were made in New York," he clearly has not substituted the module produced in the New York proceeding, with necessary changes (e.g., identifying the specific LATAs and tandems for Virginia). This discrepancy substantially lowers the costs produced by the MSM for interoffice transport UNEs.

Q. What causes the huge discrepancy between the electronic investments produced by the real New York module (run for Virginia) and Mr. Pitkin's September 21 module?

A. Mr. Pitkin's September 21 module appears to incorporate at least two additional changes that were not made in the New York proceeding. AT&T/WorldCom did make these changes , however, in the ongoing Massachusetts proceeding:[8] (1) some investment in OC3 multiplexing equipment that was included in New York has been removed, and (2) the formula that adds additional ADM systems to rings that exceed a capacity constraint has been changed.[9] In fact, running Mr. Pitkin's July 2 model with the Massachusetts

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[8] Before the Massachusetts Department of Telecommunications and Energy, D.T.E. 01-20, *Direct Testimony of Robert A. Mercer* (May 8, 2001) at pgs. 51-53. Dr. Mercer compares the Massachusetts module to one provided in the ongoing New Jersey case on January 17, 2001. The New Jersey module is almost identical to the one provided to the New York Public Service Commission on the same day, which I have described above.

[9] The change in this formula alone reduces the number of additional ADMs by several hundred -- from 434 to153 using Mr. Pitkin's old traffic volumes, and from 355 to 114 using the revised traffic volumes.

Switching and Interoffice Module produces electronic investments of $537 million -- an amount that is very close to the figure produced by using his September 21 module (i.e., $531 million).

Q. Your previous responses have described various runs of the MSM that differed with respect to which version of the Switching and Interoffice Module you included. Did this affect the MSM's loop modules?

A. No. Each of these runs used the same results from the loop modules used in Mr. Pitkin's original submission. The MSM is structured so that if inputs that do not affect the loop calculations are not changed, intermediate outputs from an earlier scenario can be used. In particular, there is no simultaneous "optimization" between the loop algorithms, on the one hand, and switching and interoffice, on the other. Instead, the Switching and Interoffice Module simply accepts certain loop inputs (i.e., line counts by wire center) as provided and there is no capability within the MSM for outputs from the switching and interoffice module to change the configuration of loop plant.

Q. Do you agree with Mr. Pitkin's statement that Verizon cannot "pick-and-choose" among the changes made in New York?

A. As I demonstrated above, Mr. Pitkin is the one doing the picking and choosing. Clearly, Mr. Pitkin "picked and chose" among those changes made in New York, incorporating some, but not others and then proceeding to make subsequent changes that were not made in New York, but were apparently made in Massachusetts.[10] Further, Mr. Pitkin's "take

[10] In response to Verizon's Data Request 14-10, which asked for an identification of all changes, AT&T/WorldCom did not describe the change in the formula that provides for additional ADMs. This formula appears in column BY

it or leave it" position seems to refer to an additional change made in New York -- the change in the input prices for SONET ring electronics. These changes, which do not address the criticisms Verizon made in New York or in this proceeding, have the effect of *reducing* the electronic investment that otherwise would have been produced. For example, although using Mr. Pitkin's new module with the original input prices[11] more than doubles the investment in SONET ring electronics (from $238 million to $531 million), using the new input prices with the new module almost completely offsets this increase -- the resulting investment is about $280 million.

Q. Has Mr. Pitkin "picked and chosen" among the inputs in the document that provides the new SONET electronics prices?

A. Indeed, he has. AT&T/WorldCom base their new inputs on an August 7, 1998 *ex parte* filing by BellSouth in the Commission's inputs proceeding.[12] Significantly, despite the fact that the SONET electronic prices in that document were made publicly available over three years ago, AT&T/WorldCom have only recently asked the FCC (in this proceeding) to change the default inputs -- inputs that AT&T/WorldCom initially advocated. Further, the 93-page *ex parte* filing contains a number of other prices that AT&T/WorldCom have not recommended as replacements for the default values. For example, Bell South's prices for copper cables, some of which were adopted by state commissions in universal service proceedings, are generally higher than the default

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of the "ring io" worksheet. In addition, as Mr. Murphy explains, that formula appears to work incorrectly because one of the rings that, according to the Model needs additional ADMs, does not get them.

[11] This would have addressed only the calculation errors in the algorithms, without introducing new input prices, which had not been challenged in Mr. Murphy's or my rebuttal testimony.

[12] *Ex parte* letter from W. W. Jordan, Vice President, Federal Regulatory, Bell South, to Magalie Roman Salas, Secretary, FCC, regarding CC Docket No. 96-45 and 97-160 (Aug. 7, 1998).

values AT&T/WorldCom have endorsed in this proceeding. Thus, if Mr. Pitkin's approach were to be applied consistently, a great many of the input values he has sponsored would have to be changed.

Q. Are there other components of the Switching and Interoffice Module Mr. Pitkin filed in this proceeding that have not been closely examined in previous regulatory proceedings?

A. Yes. The problems identified by Verizon in New York and the corrections made by AT&T/WorldCom in response to those specific problems both dealt with applications in which every wire center was treated as a stand-alone switch. In contrast, Mr. Pitkin has chosen the option that distinguishes among stand-alone, host, and remote switches. Consequently, because the components of the Switching and Interoffice Module that calculate the investments in the host-remote ring systems were not subject to scrutiny in the New York proceeding (or any other proceeding of which I am aware), there is no basis upon which to conclude that previous investigations have uncovered problems in time to correct them for this proceeding.

Q. Are there significant inconsistencies in how Mr. Pitkin's Switching and Interoffice Module calculates investments for host-remote rings?

A. Yes. The investment calculations for host-remote ring electronic components differ substantially in unexplained ways from the calculations that produce investments for stand-alone and host switches, and these differences produce substantially less

investment for switches that differ only in whether they are remote switches on host-remote rings or stand-alone or host switches on interoffice rings.[13]

Q. Please describe how the determination of investment differs.

A. I have focused on the investment in electronic equipment, which accounts for the majority of interoffice investments. To illustrate this difference, it is first useful to identify the types of equipment represented in the Model.

- ADM investment. In the interoffice ring calculations, each wire center is equipped with either a single small ADM system (if the wire center has traffic of 12 or fewer DS-3s) or one or more large ADM systems.[14] The treatment of remote wire centers is conceptually the same *if* traffic exceeds 3 DS-3s.[15] When traffic is lower, which the MSM represents is the case for the majority of Verizon's remote wire centers in Virginia, *absolutely no investment in ADM systems is included.*
- OC3 Multiplexers. In the interoffice ring calculations, one OC3 MUX is provided for every 3 DS-3 (rounded up). For example, if there were 20 DS-3s at a particular office, seven OC3 MUXes would be needed. For host-remote rings, the Model provides *absolutely no OC3 MUX investment* when traffic exceeds 3 DS-3s. When traffic is

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[13] As I explained previously, the Switching and Interoffice Module included in Mr. Pitkin's surrebuttal testimony appears to be very similar to the one used in the ongoing Massachusetts proceeding. The documentation submitted in that proceeding states that the methodology for host-remote rings and interoffice rings is the same. HAI Consulting, Inc., *HAI Model Release 5.2a-MA, Model Description* (April 12, 2001) at p. 59 ("HAI Model Description"). The documentation (at p. 57) does refer to *increased* capacity requirements for host switches, but that does not provide any explanation (or even mention) of why remote switches are treated differently.

[14] For Mr. Pitkin's surrebuttal cost estimates, the Switching and Interoffice Module has been changed so that when traffic exceeds 48 DS-1s in a wire center, one or more additional large ADM systems are added.

[15] Because of the difference in how traffic is treated in the remote and interoffice investment calculations (which I discuss below), every remote wire center, as well as the host switches (some of which have large line counts and traffic volumes) are assumed to have a small ADM system.

lower, the Model provides one OC3 MUX, whose cost is reduced when less than the full capacity of the MUX is required.[16]

- Digital Cross Connects ("DCS"). The Model represents considerably more traffic requiring DCS investment in the interoffice rings. In particular, when a wire center is treated as a remote switch: (1) its traffic is divided by 2 (this division does not occur for stand-alone switches),[17] and (2) all traffic associated with special access lines is ignored. Because special access traffic accounts for the large majority of traffic on the interoffice rings, this exclusion greatly reduces the number of DCSs and the associated investment when a wire center is treated as a remote switch.

Q. Have you quantified the difference in the amounts of investment produced by the Model?

A. Yes. For the purpose of identifying the reduced investment remote switches receive, I have compared two pairs of switches: (1) two large ones and (2) two small ones. The following table presents the results of these comparisons.

[16] In particular, the full capacity of the MUX is 84 DS-1s, which is divided into 12 blocks of 7 DS-1s. For each of these blocks that are not required, investment is reduced by a certain amount. The HAI Model Description (at p. 61), describes how small wire centers that are linked to interoffice rings as "spur terminals" are equipped in this fashion. However, according to the HAI Model Description: (1) this treatment is intended only for wire centers on interoffice rings, not host-remote rings and (2) the definition of small office seems to be no larger than 5,000 lines.

[17] On the other hand, traffic at each wire center on host-remote rings is increased by 40 percent to account for transiting traffic. The traffic for wire centers on interoffice rings is not increased in this way.

Table 3

CCLI	WLBGVAJP	FRFXVAFF	LYBGVAYB	LYBGVANL
Type	Large Remote	Large Stand-alone	Small Remote	Small Stand-alone
Lines	76,416	107,458	5,530	7,193
Total DS-3s	70	72	2	2
Switched DS-3s	8	NA	1	NA
Electronic Investment				
Large ADMs	0	2	0	0
Small ADMs	1	0	0	1
ADM Investment	$86,199	$275,186	$0	$86,199
OC3 MUXes	0	24	1	1
7 DS-1s	NA	NA	4	NA
OC3 Investment	$0	$983,640	$32,649	$40,985
DCS	8	72	1	2
DCS Investment	$69,936	$629,424	$8,742	$17,484
Total Investment	$156,135	$1,888,250	$41,391	$144,668
Prices				
Large ADM	$137,593			
Small ADM	$86,199			
OC3 MUX	$40,985			
DCS	$8,742			
per 7 DS-1s	$1,042			

Q. Please describe your comparisons.

A. The first two columns of Table 3 illustrate the extreme difference in the treatment of large switches. Both switches have a large number of lines and they generate a comparable level of traffic (70 versus 72 DS-3s). The stand-alone switch (FRFXVAFF), however, is assigned over *ten times* the investment in electronics as the remote switch (WLBGVAJP). The contrast is as follows.

- The large stand-alone switch requires two large ADM systems to handle its 72 DS-3s, while the large remote is assumed to have only one small ADM system.

- The large stand-alone switch needs 24 OC3 MUXes, while the remote switch is equipped with none.
- The large stand-alone switch has 9 times the number of DCSs.

For the small switches (LYBGVAYB remote and LYBGVANL stand-alone), the bottom line difference is not as extreme, but there is still more than a 3-fold difference in investment. The specific components are as follows.

- The small stand-alone switch is equipped with one small ADM system, while the remote has none.
- Both switches have one OC3 MUX, although the cost for the remote switch is lower. The stand-alone switch has two DCSs, versus one for the remote switch.

Q. What is the overall impact of the different treatment of electronics investments in host-remote rings?

A. The MSM produces substantially less investment when it is run with the host-remote option activated (as Mr. Pitkin has done) compared to not invoking this option (as was the case in the New York proceeding). While Mr. Pitkin's run produces $212 million investment in electronics, an alternate run without the host-remote option generates $254 million, or about 20 percent more investment.

Q. Has the Switching and Interoffice Module Mr. Pitkin filed in this proceeding been fully reviewed and approved by any regulatory commission?

A. No. If anything, the opposite is true. The recommended decision in the New York proceeding rejected the HAI Model, and by implication, the purportedly corrected

Switching and Interoffice Module contained therein.[18] In fact, the HAI Model's Switching and Interoffice Module has changed so many times in various jurisdictions that it is difficult to know what version any particular regulator would be evaluating.[19] The following recent history illustrates this difficulty:

- February 7, 2000. AT&T/WorldCom file the HAI Model in the New York proceeding.
- June 26, 2000. Verizon submits rebuttal testimony in the New York proceeding identifying flaws.
- July 28, 2000. AT&T submits a new version of the HAI Model in New Jersey that appears to respond to some of the criticisms made by Verizon in the New York proceeding.
- October 12, 2000. AT&T/WorldCom submit surrebuttal testimony in the New York proceeding that explicitly addresses some of Verizon's criticisms *and* changes the inputs for SONET ring electronics.
- January 17, 2001. AT&T/WorldCom submit new versions of the HAI Model in both New York and New Jersey, which include changes made in response to record

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[18] Before the New York Public Service Commission, Proceeding on Motion of Commission to Examine New York Telephone Company's Rates for Unbundled Network Elements, Case 98-C-1357, *Recommended Decision on Module 3 Issues by Administrative Law Judge Joel A. Linsider* (May 16, 2001). Indeed, Judge Linsider's decision (at p. 34) noted that "the recurring corrections to the Model seem to confirm its weaknesses more than its suppleness." As discussed below, many of these recurring corrections involved changes to the switching and interoffice modules. The other two states that are considering the HAI Model have yet to reach a decision.

[19] Indeed, various attempts to fix the module made in other states do not work properly in Virginia. For example, as Mr. Murphy explains in more detail, a change that was intended to provide larger fiber cables when SONET rings exceed a certain traffic volume actually has the effect of *reducing* fiber investment by about $8 million (a decrease of about 7 to 8 percent). While the correction does assign more fiber to the large rings, it also has the effect of eliminating the fiber that connects remote offices to their hosts.

requests from AT&T/WorldCom witness Dr. Robert A. Mercer's December 20, 2000 cross examination in New York.

- May 8, 2001. AT&T/WorldCom submit a new Switching and Interoffice Module with their direct testimony in the Massachusetts proceeding.
- July 2, 2001. AT&T/WorldCom's filing in this proceeding incorporates the Switching and Interoffice Module originally filed in the New York proceeding.
- September 21, 2001. AT&T/WorldCom introduce a new Switching and Interoffice Module, apparently based on the module used in Massachusetts.

IV. NETWORK OPERATIONS EXPENSES

Q. Why did Mr. Pitkin change his assignment of network operations expenses to individual UNEs?

A. He appears to agree with the analysis contained in my rebuttal testimony, which showed that his convoluted and overly detailed attempt to assign network operations expenses resulted in the loss of a portion of these expenses. Mr. Pitkin, however, understates the magnitude of that loss. Almost one-quarter of the total amount of network operations expenses did not flow through to the costs of individual UNEs calculated in his original July 2 filing.[20]

Q. Has Mr. Pitkin fixed the problem?

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[20] Mr. Pitkin incorrectly states that only 13 percent of network operations expenses failed to flow through. Before the Federal Communications Commission, CC Docket Nos. 00-218, -249, -251, *Surrebuttal Testimony of Brian F. Pitkin* (Sept, 21, 2001) at p. 72 (corrected). This statement was based on comparing the network operations expenses produced by the Model *after application of a 16 percent markup for corporate overheads, other taxes, and uncollectibles* to the total amount that should have been included, which was not marked up. Before the Federal Communications Commission, CC Docket Nos. 00-218, -249, -251, *AT&T/WorldCom's Response to Verizon's Fourteenth Set of Data Requests, Response No. 14-11* (Oct. 4, 2001). The proper comparison would have removed

A. Not completely. Repeating the same test I performed in my direct testimony[21] demonstrates that only $93 million of the $106 million in network operations expenses flows through to the cost of UNEs. His overly complicated algorithms for assigning these expenses apparently still fail to work properly.

Q. Do Mr. Pitkin's changes address all of the flaws in how the MSM assigns network operations expenses to elements?

A. No. Despite all of Mr. Pitkin's changes, his approach still suffers from the overall problem of inflated line counts, although his revised projection does slightly mitigate the problem.[22]

Q. Does this conclude your supplemental rebuttal testimony?

A. Yes.

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the mark-up (as I did on page 61 of my rebuttal testimony) and that comparison shows a shortfall of $25 million of the $106 million network operations expenses that Mr. Pitkin intended to assign to elements.

[21] *See* Before the Federal Communications Commission, CC Docket Nos. 00-218, -249, -251, *Rebuttal Testimony of Timothy J. Tardiff* (Aug. 27, 2001) at p. 61

[22] Mr. Pitkin attempts to justify his inflated line counts by citing ¶ 393 of the Tenth Report and Order. A careful reading of that paragraph shows that the FCC's reasoning (e.g., winning and keeping customers) does not seem to apply to network operations expenses. Why should it cost 24 times as much to provide network operations support to a DS-1 customer in light of the fact that such a customer may only be served by two physical pairs?